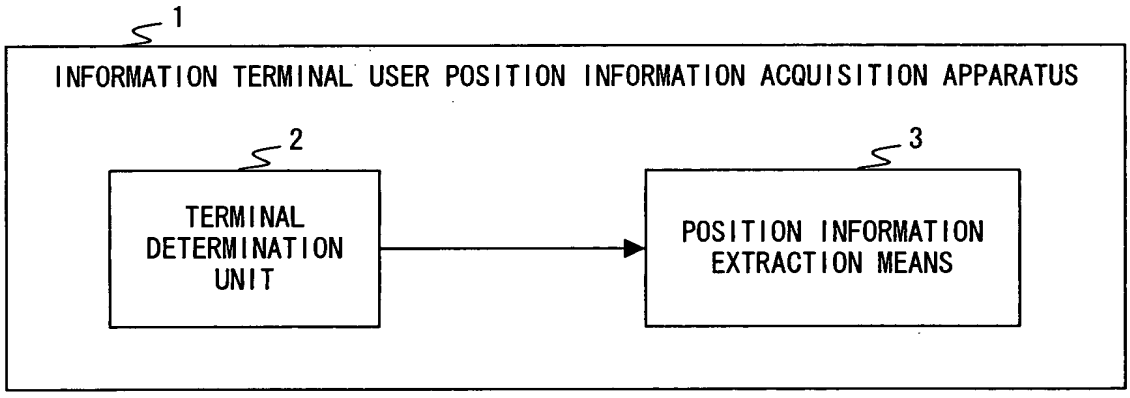
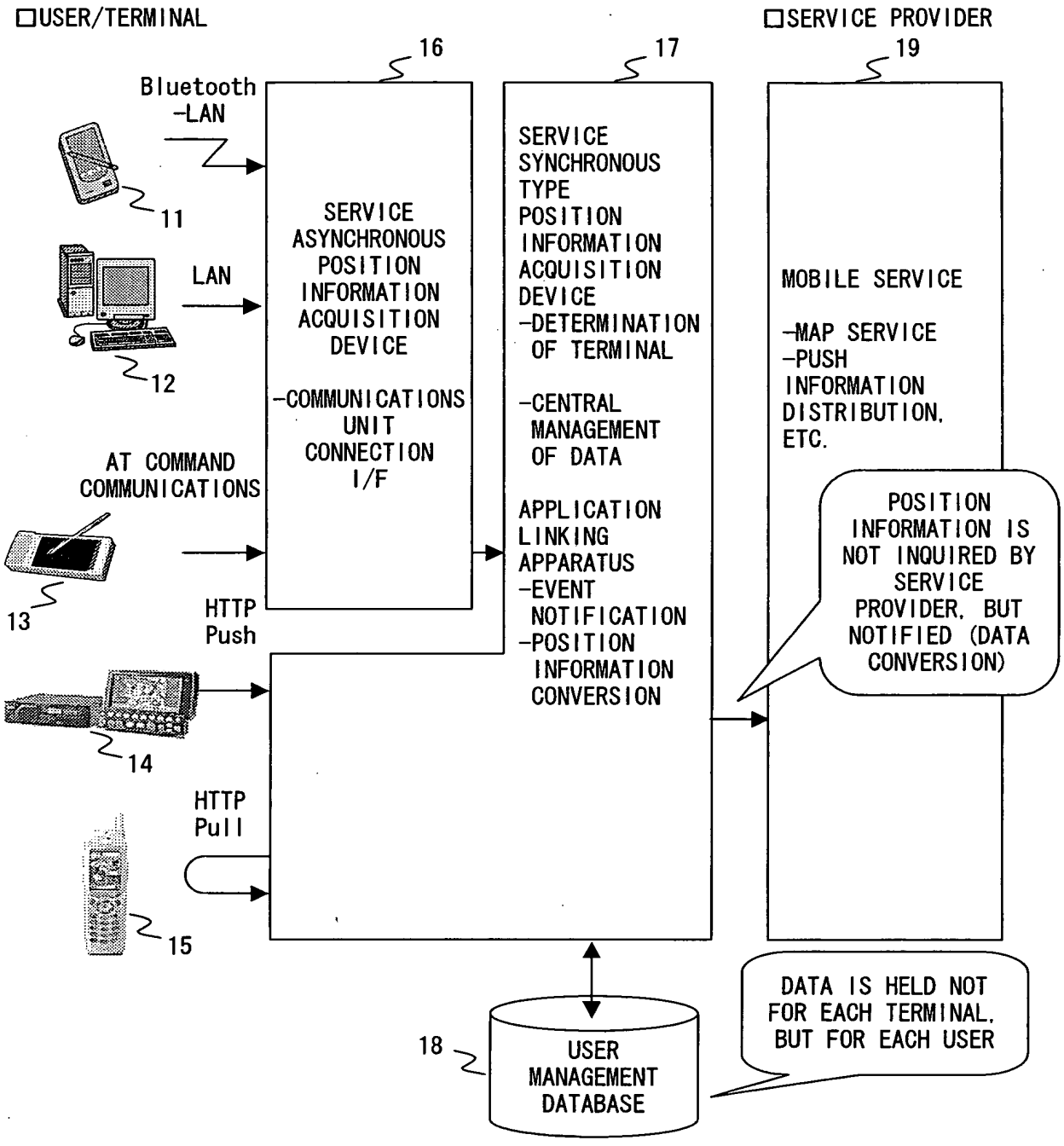

1
INFORMATION TERMINAL USER POSITION INFORMATION ACQUISITION APPARATUS
2
TERMINAL DETERMINATION UNIT
3
POSITION INFORMATION EXTRACTION MEANS

FIG. 1



【POSITION INFORMATION】
MICHIO FUJI=1453, 2000/11/6¥11:13, BASE STATION NUMBER, (3)
(1)CAR NAVIGATION SYSTEM=34. 43. 25. 38, 143. 45. 25. 38, 2000/11/5 ¥9:27, LATITUDE/LONGITUDE
(2)PDA=MUSASHINAKAHARA STATION, 2000/11/2¥17:30, NEAREST STATION
(3)MOBILE PHONE=1453, 2000/11/6¥11:13, BASE STATION NUMBER

FIG. 2

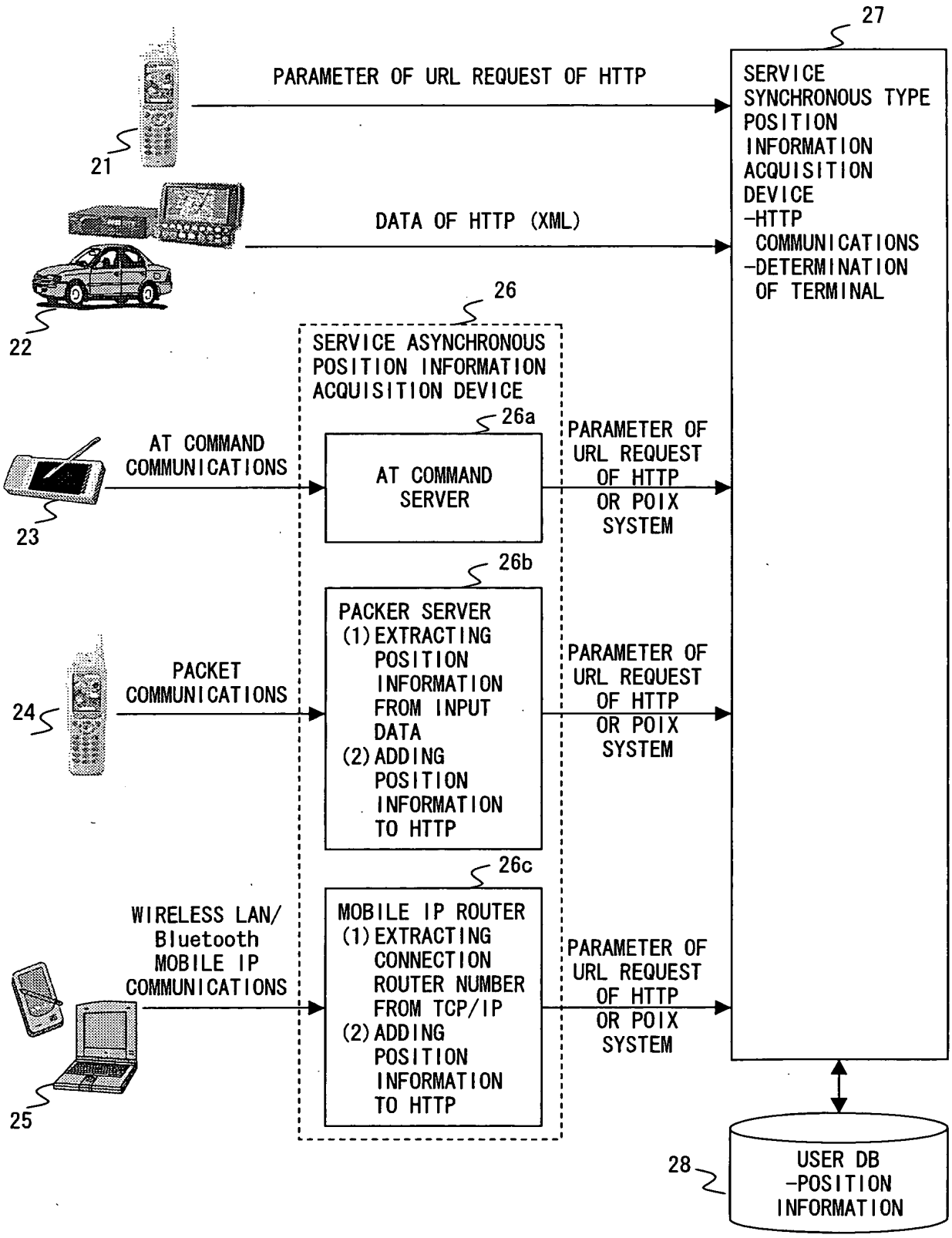

27
SERVICE SYNCHRONOUS TYPE POSITION INFORMATION ACQUISITION DEVICE
-HTTP COMMUNICATIONS
-DETERMINATION OF TERMINAL
PARAMETER OF URL REQUEST OF HTTP
21
DATA OF HTTP (XML)
22
26
SERVICE ASYNCHRONOUS POSITION INFORMATION ACQUISITION DEVICE
26a
AT COMMAND COMMUNICATIONS
AT COMMAND SERVER
PARAMETER OF URL REQUEST OF HTTP OR POIX SYSTEM
23
26b
PACKER SERVER
(1) EXTRACTING POSITION INFORMATION FROM INPUT DATA
(2) ADDING POSITION INFORMATION TO HTTP
PACKET COMMUNICATIONS
24
PARAMETER OF URL REQUEST OF HTTP OR POIX SYSTEM
26c
WIRELESS LAN/ Bluetooth MOBILE IP COMMUNICATIONS
MOBILE IP ROUTER
(1) EXTRACTING CONNECTION ROUTER NUMBER FROM TCP/IP
(2) ADDING POSITION INFORMATION TO HTTP
PARAMETER OF URL REQUEST OF HTTP OR POIX SYSTEM
25
28
USER DB
-POSITION INFORMATION

FIG. 3

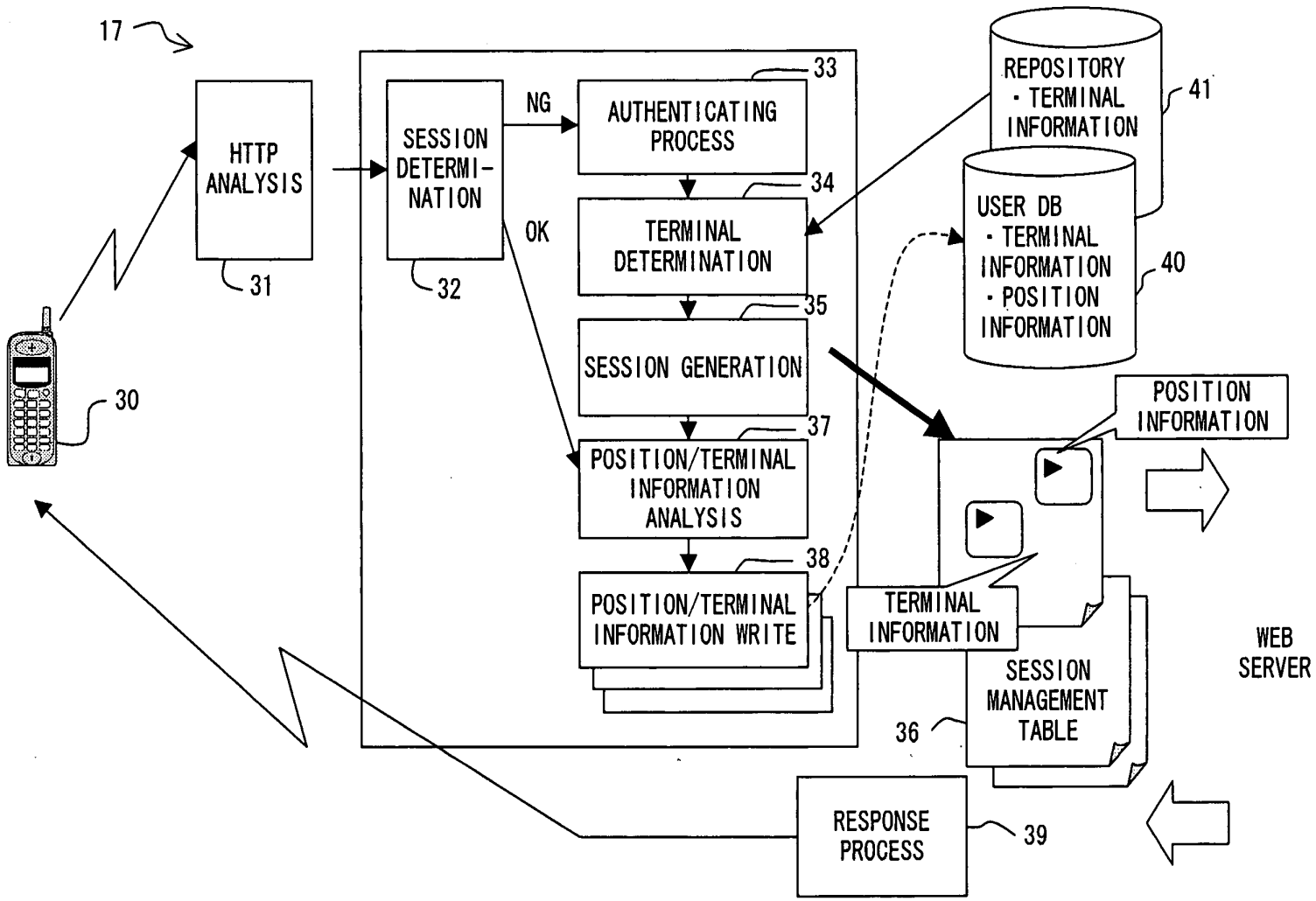
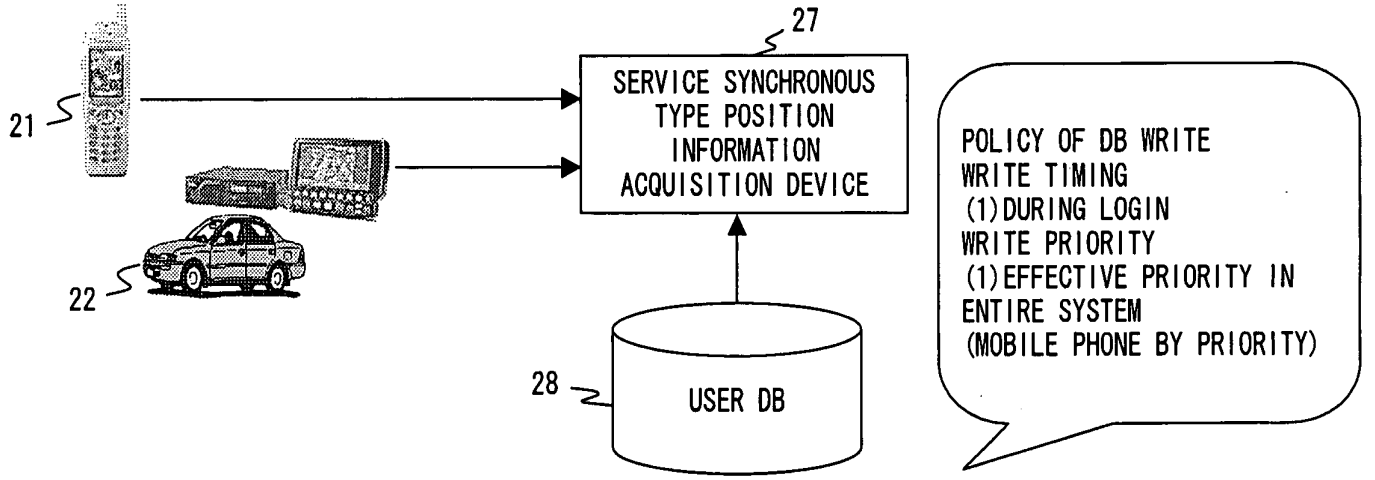

17
HTTP ANALYSIS
31
SESSION DETERMI-NATION
32
NG
OK
AUTHENTICATING PROCESS
33
TERMINAL DETERMINATION
34
SESSION GENERATION
35
POSITION/TERMINAL INFORMATION ANALYSIS
37
POSITION/TERMINAL INFORMATION WRITE
38
REPOSITORY · TERMINAL INFORMATION
41
USER DB · TERMINAL INFORMATION · POSITION INFORMATION
40
POSITION INFORMATION
TERMINAL INFORMATION
SESSION MANAGEMENT TABLE
36
WEB SERVER
RESPONSE PROCESS
39
30

FIG. 4



【POSITION INFORMATION】
MICHIO FUJI=1453, 2000/11/6¥11:13, BASE STATION NUMBER, (3)
(1)CAR NAVIGATION SYSTEM=34. 43. 25. 38, 143. 45. 25. 38, 2000/11/5 ¥9:27, LATITUDE/LONGITUDE
(2)PDA=MUSASHINAKAHARA STATION, 2000/11/2¥17:30, NEAREST STATION
(3)MOBILE PHONE=1453, 2000/11/6¥11:13, BASE STATION NUMBER

FIG. 5

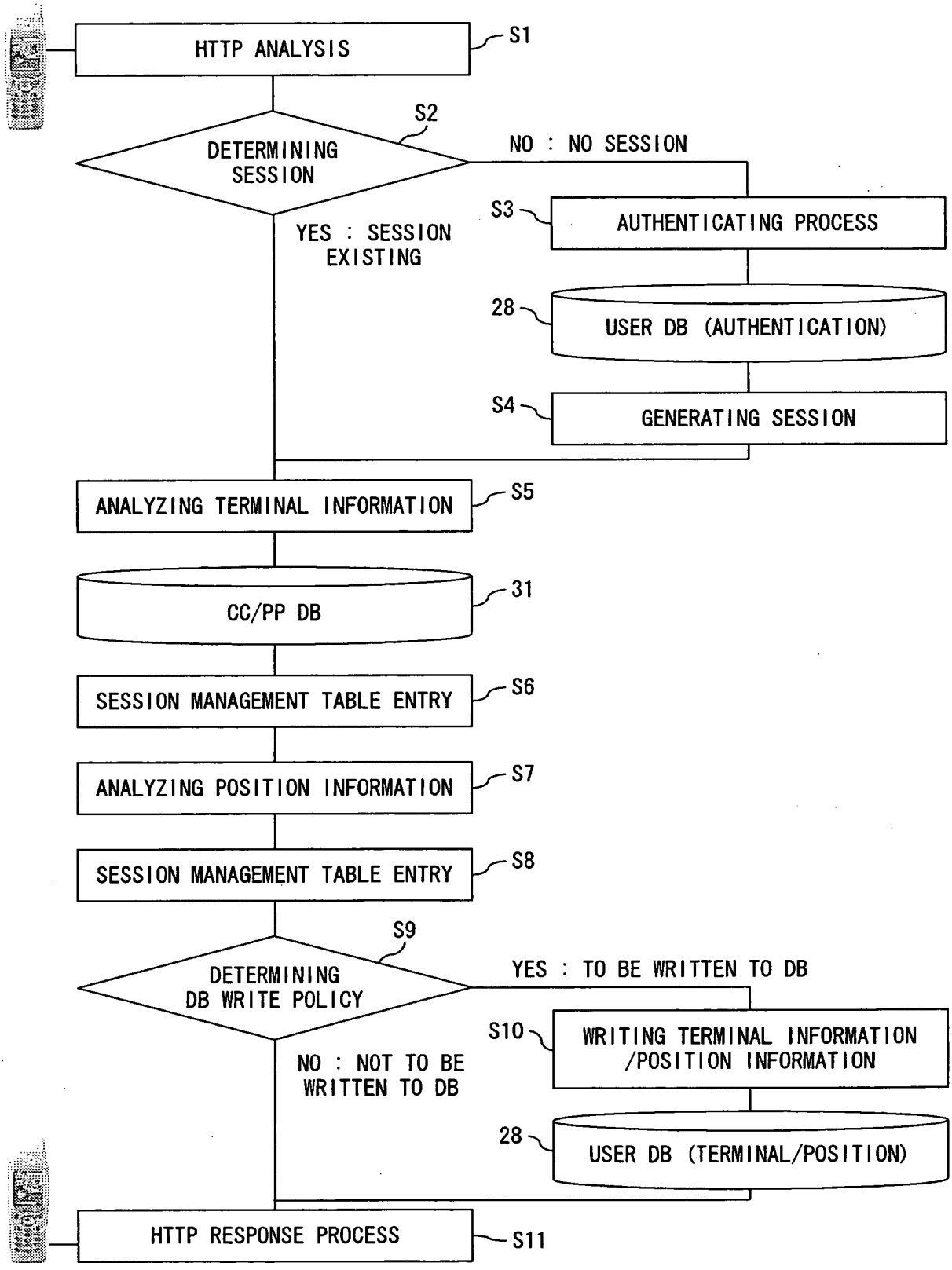

HTTP ANALYSIS
S1
DETERMINING SESSION
S2
NO : NO SESSION
YES : SESSION EXISTING
S3
AUTHENTICATING PROCESS
28
USER DB (AUTHENTICATION)
S4
GENERATING SESSION
ANALYZING TERMINAL INFORMATION
S5
CC/PP DB
31
SESSION MANAGEMENT TABLE ENTRY
S6
ANALYZING POSITION INFORMATION
S7
SESSION MANAGEMENT TABLE ENTRY
S8
DETERMINING DB WRITE POLICY
S9
YES : TO BE WRITTEN TO DB
NO : NOT TO BE WRITTEN TO DB
S10
WRITING TERMINAL INFORMATION /POSITION INFORMATION
28
USER DB (TERMINAL/POSITION)
HTTP RESPONSE PROCESS
S11

FIG. 6

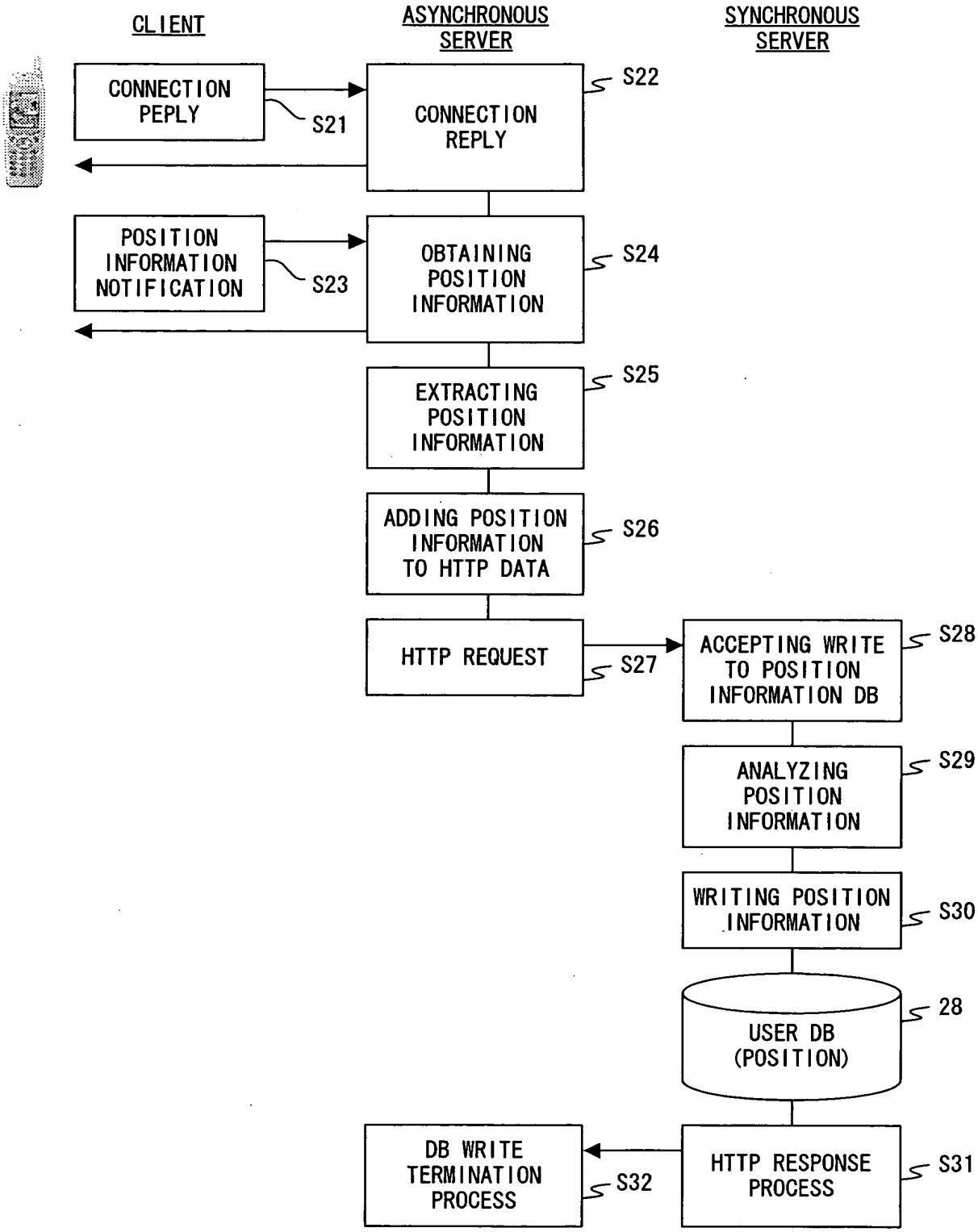

CLIENT
ASYNCHRONOUS SERVER
SYNCHRONOUS SERVER
CONNECTION PEPLY
S21
CONNECTION REPLY
S22
POSITION INFORMATION NOTIFICATION
S23
OBTAINING POSITION INFORMATION
S24
EXTRACTING POSITION INFORMATION
S25
ADDING POSITION INFORMATION TO HTTP DATA
S26
HTTP REQUEST
S27
ACCEPTING WRITE TO POSITION INFORMATION DB
S28
ANALYZING POSITION INFORMATION
S29
WRITING POSITION INFORMATION
S30
USER DB (POSITION)
28
HTTP RESPONSE PROCESS
S31
DB WRITE TERMINATION PROCESS
S32

FIG. 7

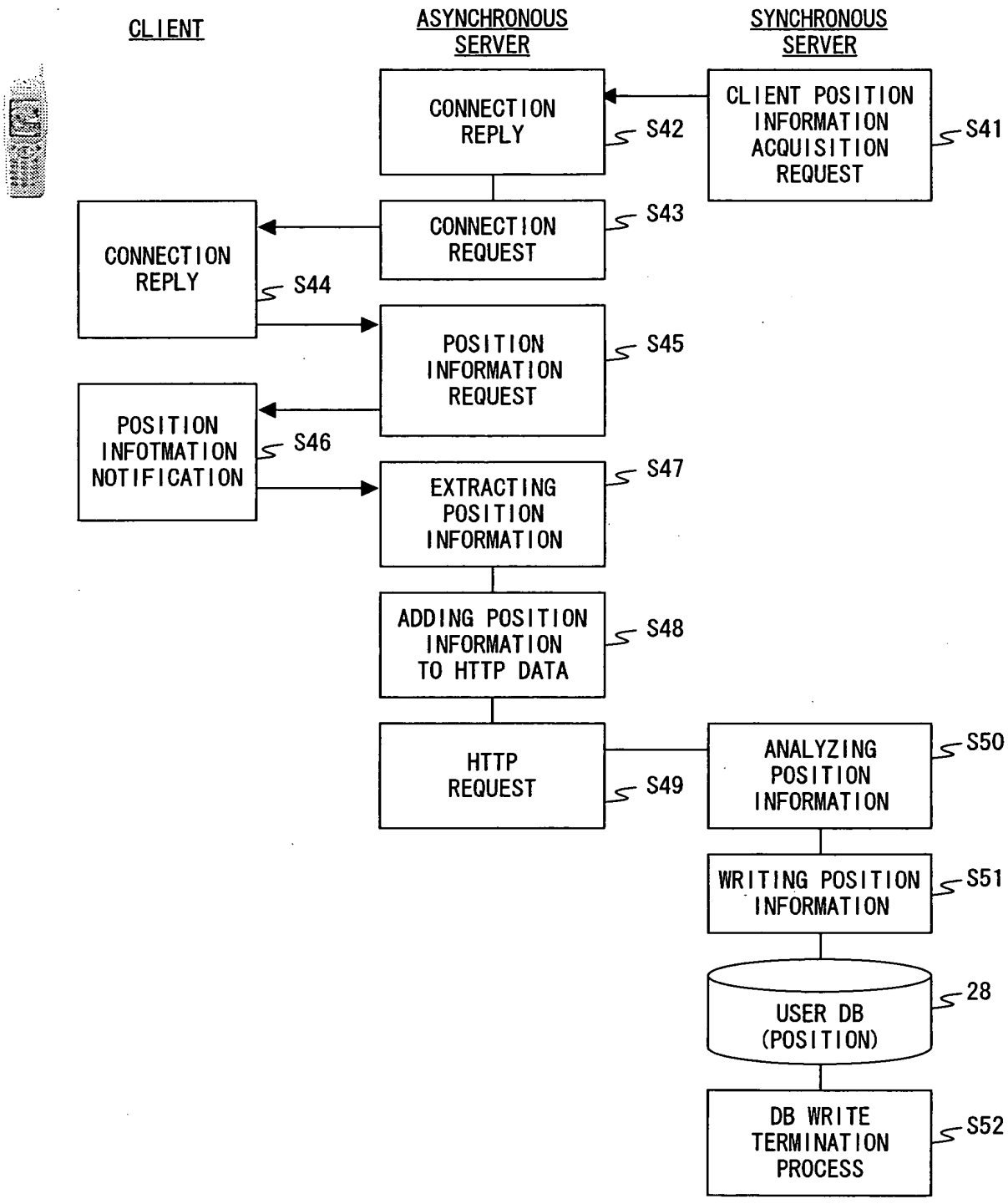

CLIENT
ASYNCHRONOUS SERVER
SYNCHRONOUS SERVER
CLIENT POSITION INFORMATION ACQUISITION REQUEST
S41
CONNECTION REPLY
S42
CONNECTION REQUEST
S43
CONNECTION REPLY
S44
POSITION INFORMATION REQUEST
S45
POSITION INFOTMATION NOTIFICATION
S46
EXTRACTING POSITION INFORMATION
S47
ADDING POSITION INFORMATION TO HTTP DATA
S48
HTTP REQUEST
S49
ANALYZING POSITION INFORMATION
S50
WRITING POSITION INFORMATION
S51
USER DB (POSITION)
28
DB WRITE TERMINATION PROCESS
S52

FIG. 8

USER ID	MALE/FEMALE	AGE	HOBBY	TERMINAL ID	DATE	TIME	POSITION DISPLAY INFORMATION

(a)

GEODESIC SYSTIM	COORDINATE SYSTEM	LATITUDE	LONGITUDE

(b)

BASE STATION NUMBER

(c)

NEAREST STATION

(d)

FIG. 9

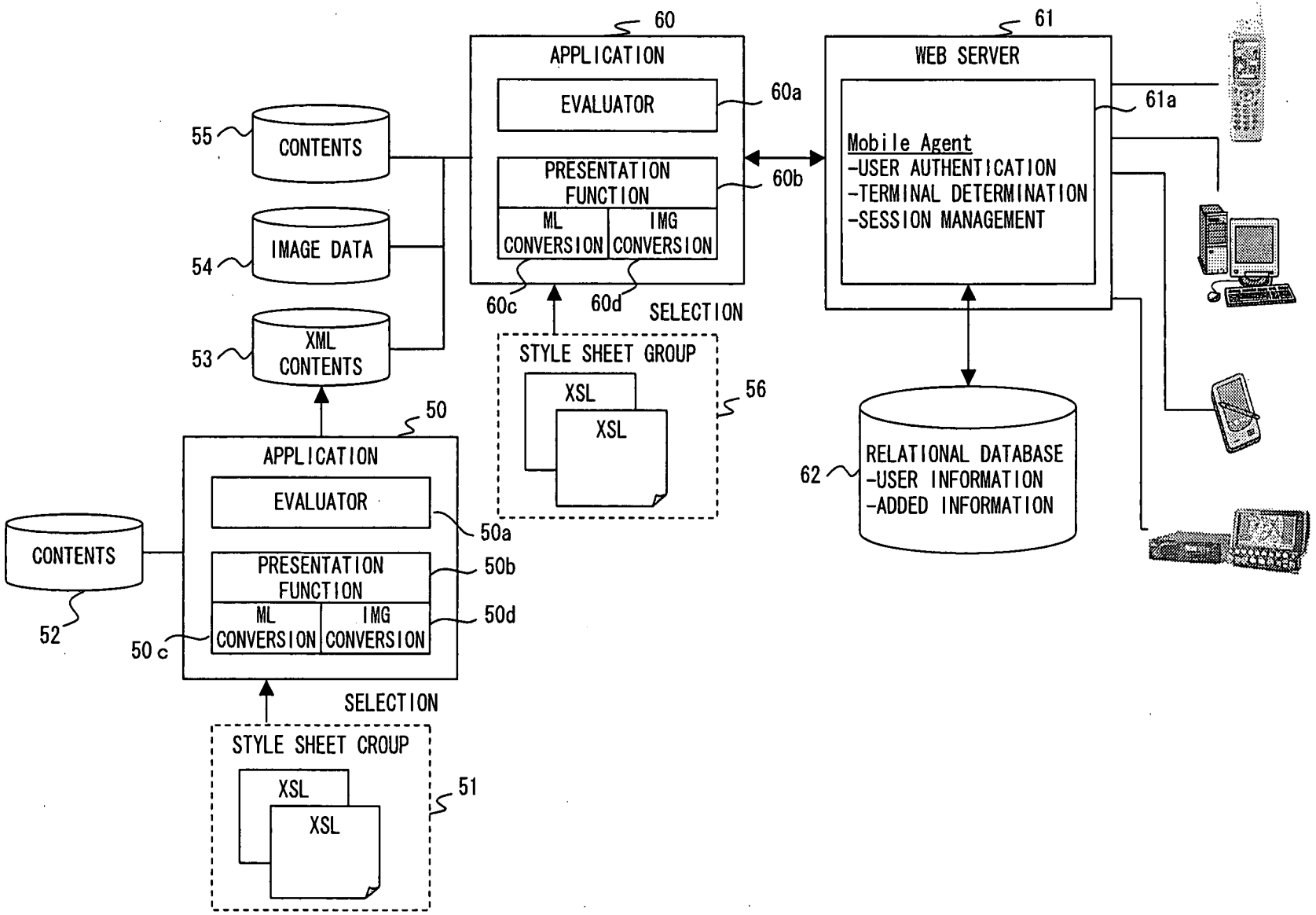

60
APPLICATION
EVALUATOR
60a
PRESENTATION FUNCTION
60b
ML CONVERSION
IMG CONVERSION
60c
60d
SELECTION
STYLE SHEET GROUP
XSL
XSL
56
61
WEB SERVER
61a
Mobile Agent
-USER AUTHENTICATION
-TERMINAL DETERMINATION
-SESSION MANAGEMENT
55
CONTENTS
54
IMAGE DATA
53
XML CONTENTS
50
APPLICATION
EVALUATOR
50a
CONTENTS
PRESENTATION FUNCTION
50b
ML CONVERSION
IMG CONVERSION
50d
52
50c
SELECTION
STYLE SHEET CROUP
XSL
XSL
51
62
RELATIONAL DATABASE
-USER INFORMATION
-ADDED INFORMATION

FIG. 10

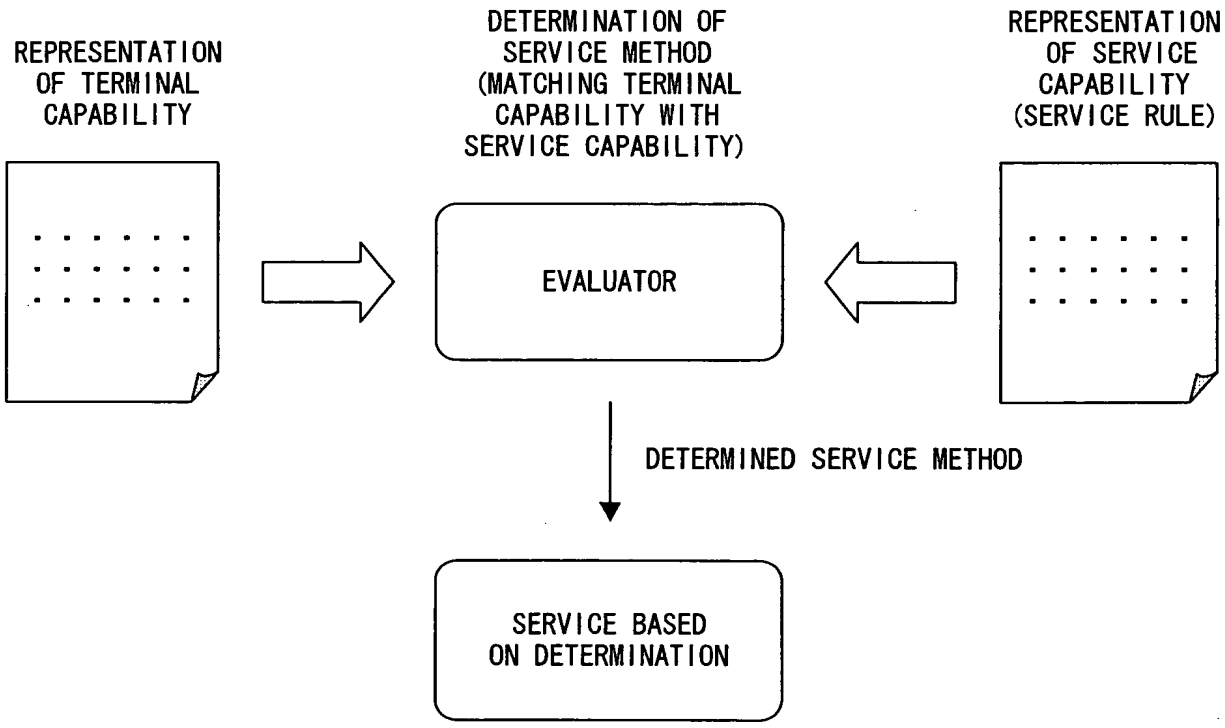

REPRESENTATION OF TERMINAL CAPABILITY
DETERMINATION OF SERVICE METHOD (MATCHING TERMINAL CAPABILITY WITH SERVICE CAPABILITY)
REPRESENTATION OF SERVICE CAPABILITY (SERVICE RULE)
EVALUATOR
DETERMINED SERVICE METHOD
SERVICE BASED ON DETERMINATION

FIG. 11

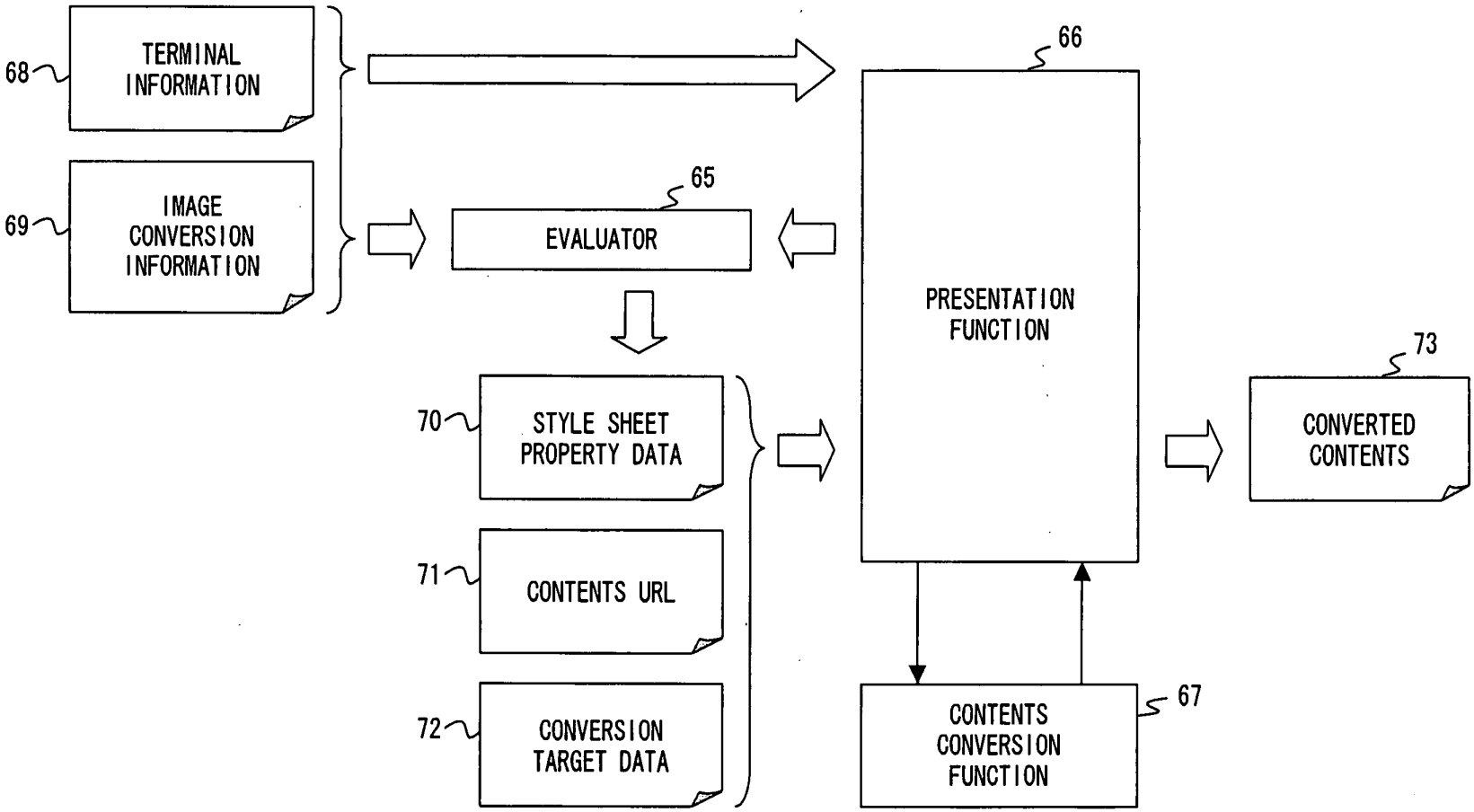

68
TERMINAL INFORMATION
69
IMAGE CONVERSION INFORMATION
65
EVALUATOR
66
PRESENTATION FUNCTION
70
STYLE SHEET PROPERTY DATA
71
CONTENTS URL
72
CONVERSION TARGET DATA
67
CONTENTS CONVERSION FUNCTION
73
CONVERTED CONTENTS

FIG. 12

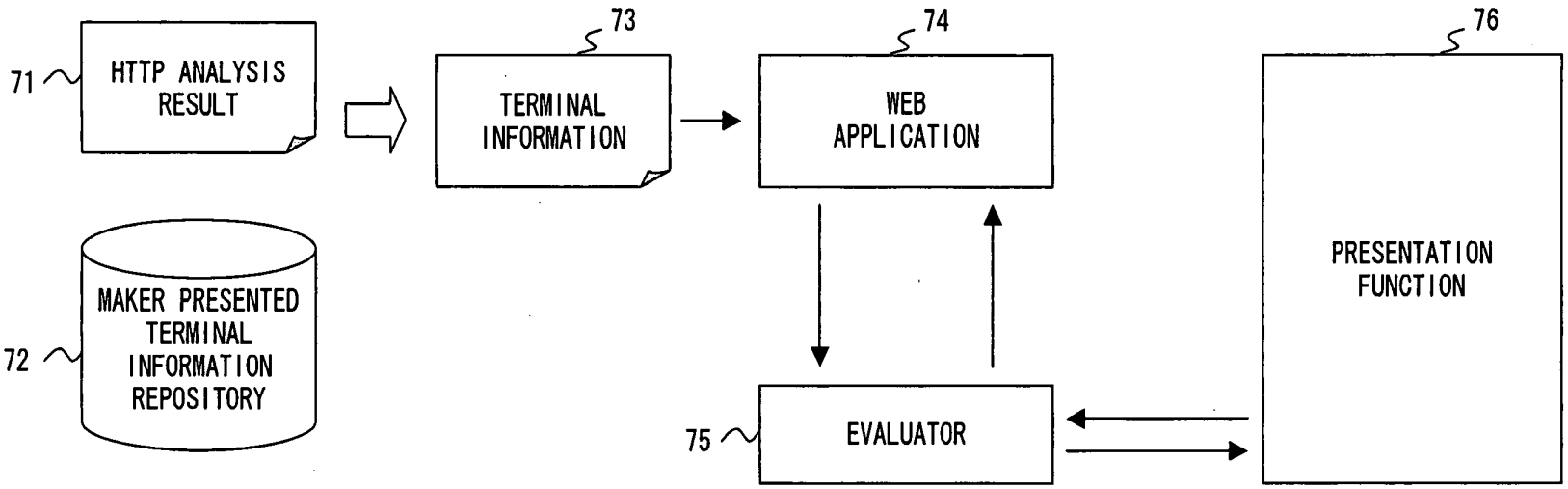

71
HTTP ANALYSIS RESULT
72
MAKER PRESENTED TERMINAL INFORMATION REPOSITORY
73
TERMINAL INFORMATION
74
WEB APPLICATION
75
EVALUATOR
76
PRESENTATION FUNCTION

FIG. 13

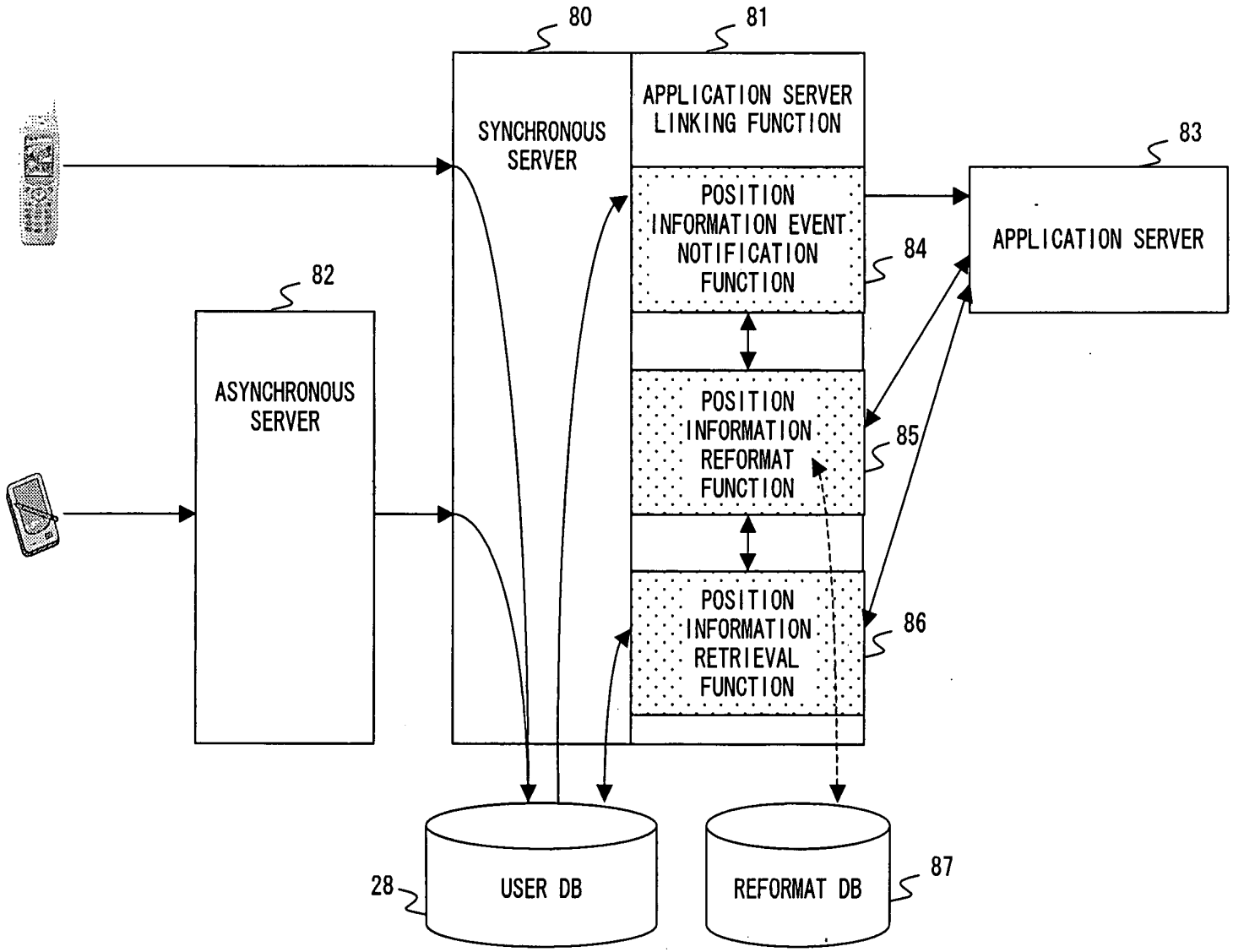
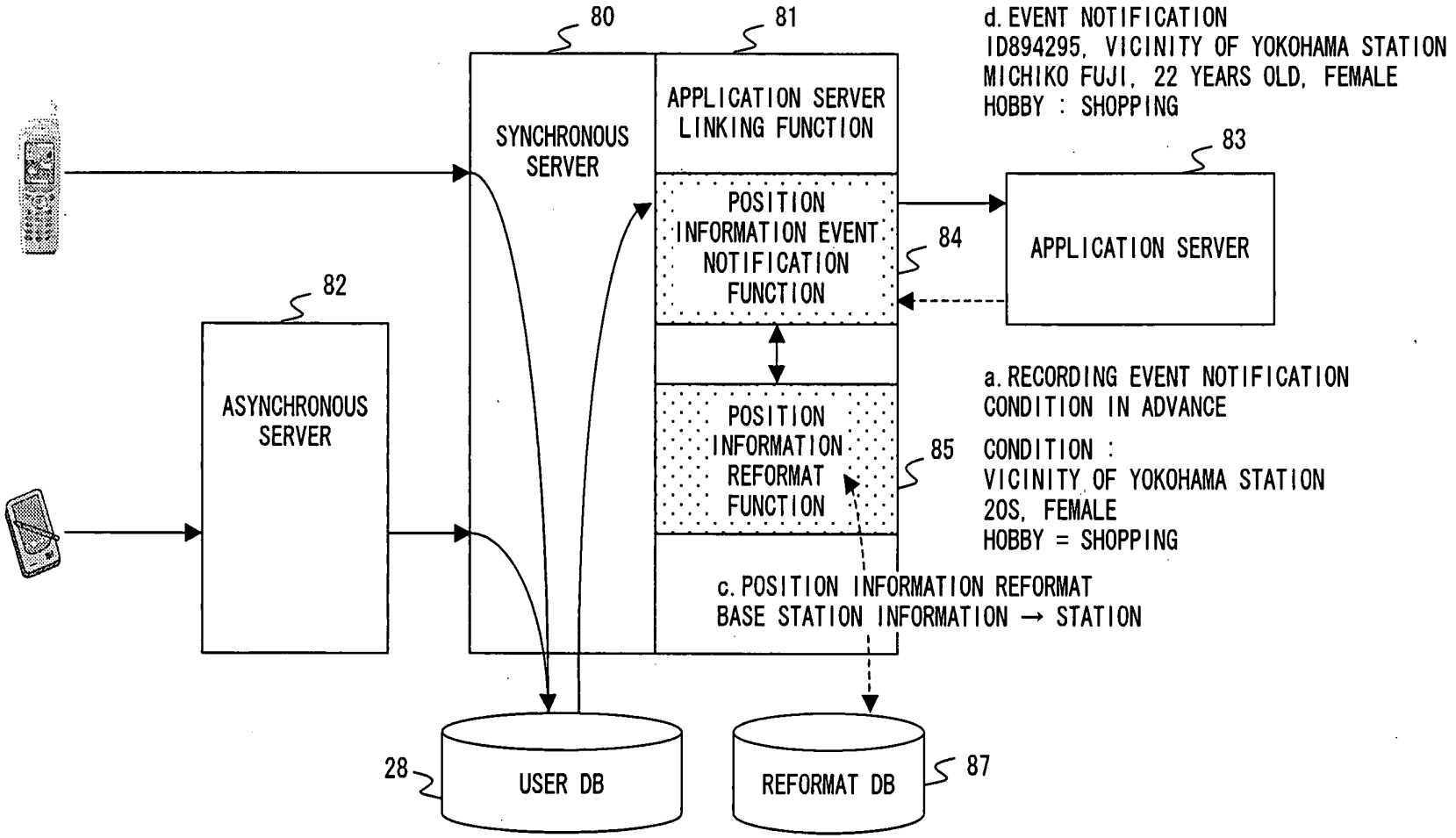

80
81
SYNCHRONOUS SERVER
APPLICATION SERVER LINKING FUNCTION
83
APPLICATION SERVER
POSITION INFORMATION EVENT NOTIFICATION FUNCTION
84
82
ASYNCHRONOUS SERVER
POSITION INFORMATION REFORMAT FUNCTION
85
POSITION INFORMATION RETRIEVAL FUNCTION
86
28
USER DB
REFORMAT DB
87

FIG. 14



b. OBTAINING POSITION INFORMATION
MICHIKO FUJI, FEMALE, 22 YEARS OLD
HOBBY : SHOPPING
MICHIKO FUJI = 1453, 2000/11/6¥11:13, BASE STATION NUMBER, (2)
(1) PDA = MUSASHINAKAHARA STATION, 2000/11/2¥17:30, NEAREST STATION
(2) MOBILE PHONE = 1453, 2000/11/6¥11:13, BASE STATION NUMBER

FIG. 15

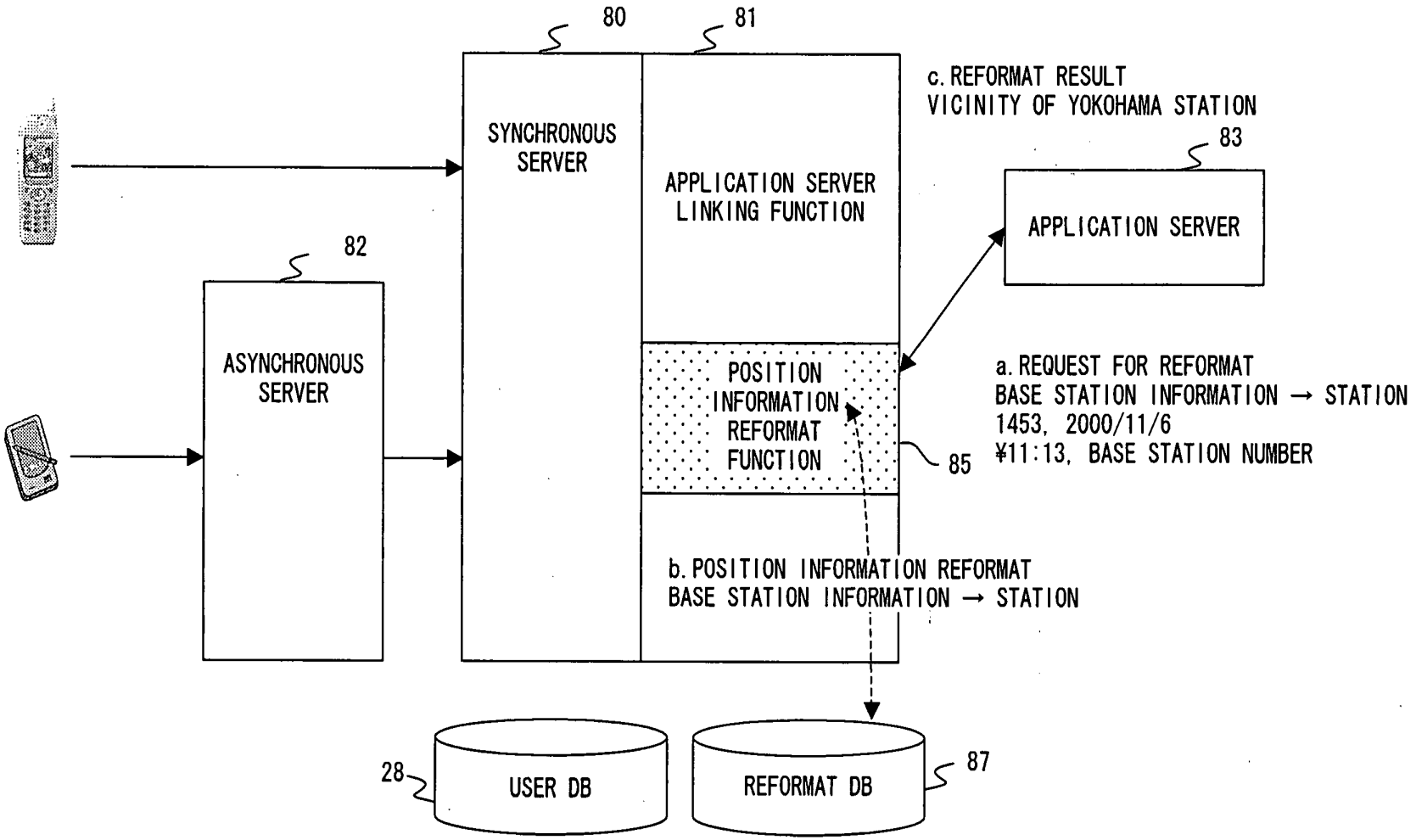

80
81
SYNCHRONOUS SERVER
APPLICATION SERVER LINKING FUNCTION
c. REFORMAT RESULT
VICINITY OF YOKOHAMA STATION
83
APPLICATION SERVER
82
ASYNCHRONOUS SERVER
POSITION INFORMATION REFORMAT FUNCTION
85
a. REQUEST FOR REFORMAT
BASE STATION INFORMATION → STATION
1453, 2000/11/6
¥11:13, BASE STATION NUMBER
b. POSITION INFORMATION REFORMAT
BASE STATION INFORMATION → STATION
28
USER DB
REFORMAT DB
87

FIG. 16

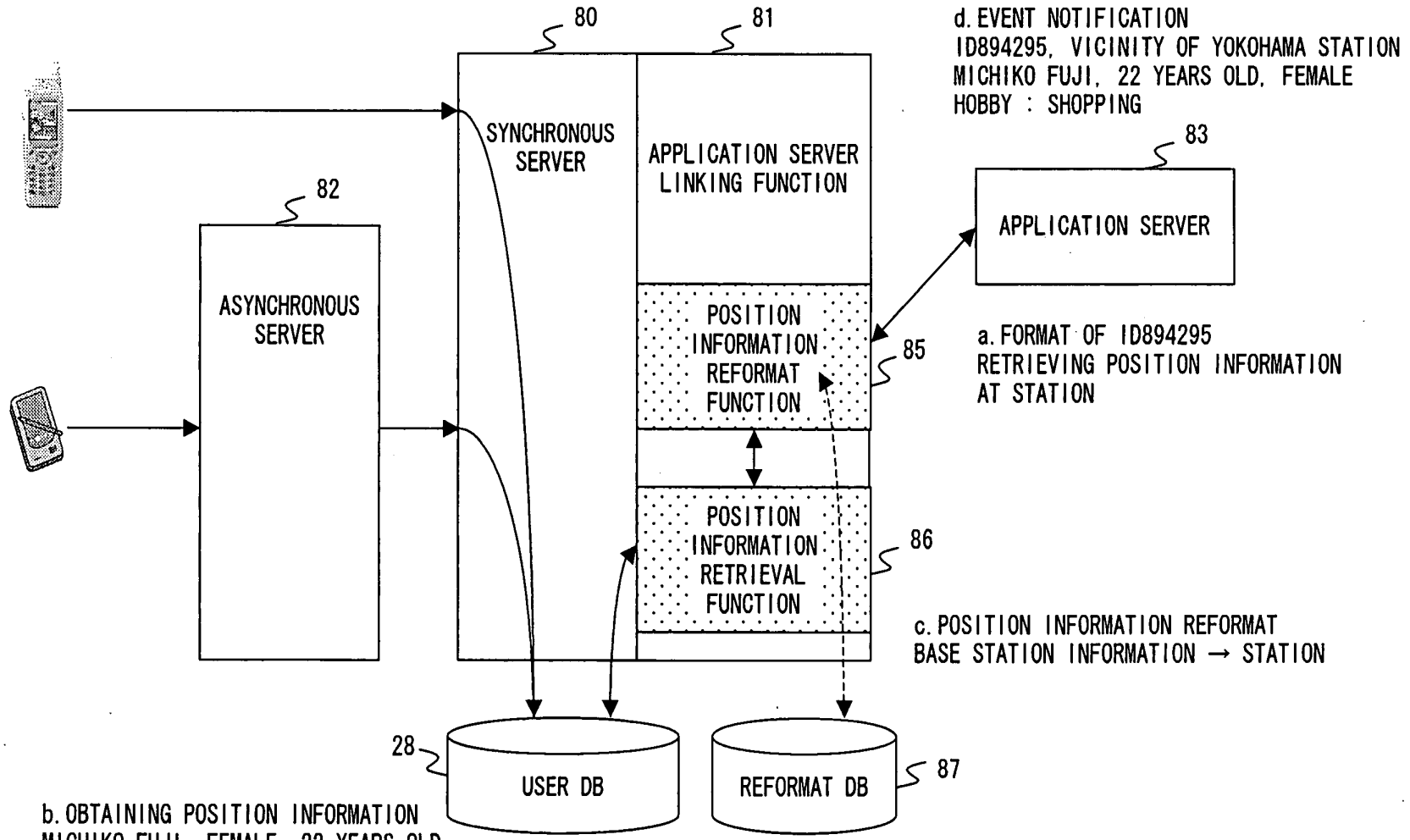
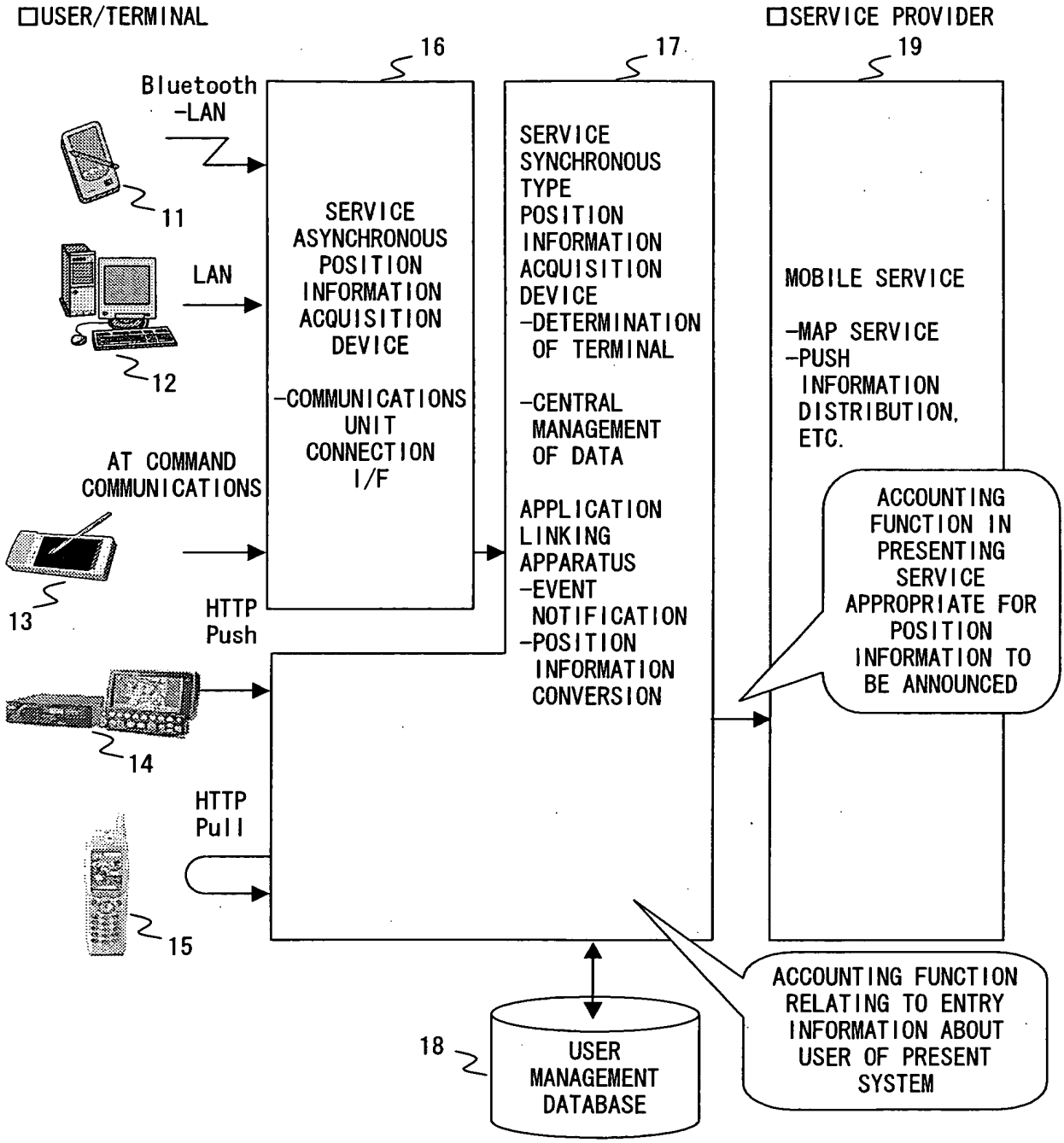

80
81
SYNCHRONOUS SERVER
APPLICATION SERVER LINKING FUNCTION
82
ASYNCHRONOUS SERVER
83
APPLICATION SERVER
POSITION INFORMATION REFORMAT FUNCTION
85
POSITION INFORMATION RETRIEVAL FUNCTION
86
28
USER DB
REFORMAT DB
87
d. EVENT NOTIFICATION
ID894295, VICINITY OF YOKOHAMA STATION
MICHIKO FUJI, 22 YEARS OLD, FEMALE
HOBBY : SHOPPING
a. FORMAT OF ID894295
RETRIEVING POSITION INFORMATION
AT STATION
c. POSITION INFORMATION REFORMAT
BASE STATION INFORMATION → STATION
b. OBTAINING POSITION INFORMATION
MICHIKO FUJI, FEMALE, 22 YEARS OLD
HOBBY : SHOPPING
MICHIKO FUJI = 1453, 2000/11/6¥11:13, BASE STATION NUMBER, (2)
(1) PDA = MUSASHINAKAHARA STATION, 2000/11/2¥17:30, NEAREST STATION
(2) MOBILE PHONE = 1453, 2000/11/6¥11:13, BASE STATION NUMBER

FIG. 17



【POSITION INFORMATION】
MICHIO FUJI=1453, 2000/11/6¥11:13, BASE STATION NUMBER, (3)
(1)CAR NAVIGATION SYSTEM=34. 43. 25. 38, 143. 45. 25. 38, 2000/11/5 ¥9:27, LATITUDE/LONGITUDE
(2)PDA=MUSASHINAKAHARA STATION, 2000/11/2¥17:30, NEAREST STATION
(3)MOBILE PHONE=1453, 2000/11/6¥11:13, BASE STATION NUMBER

FIG. 18

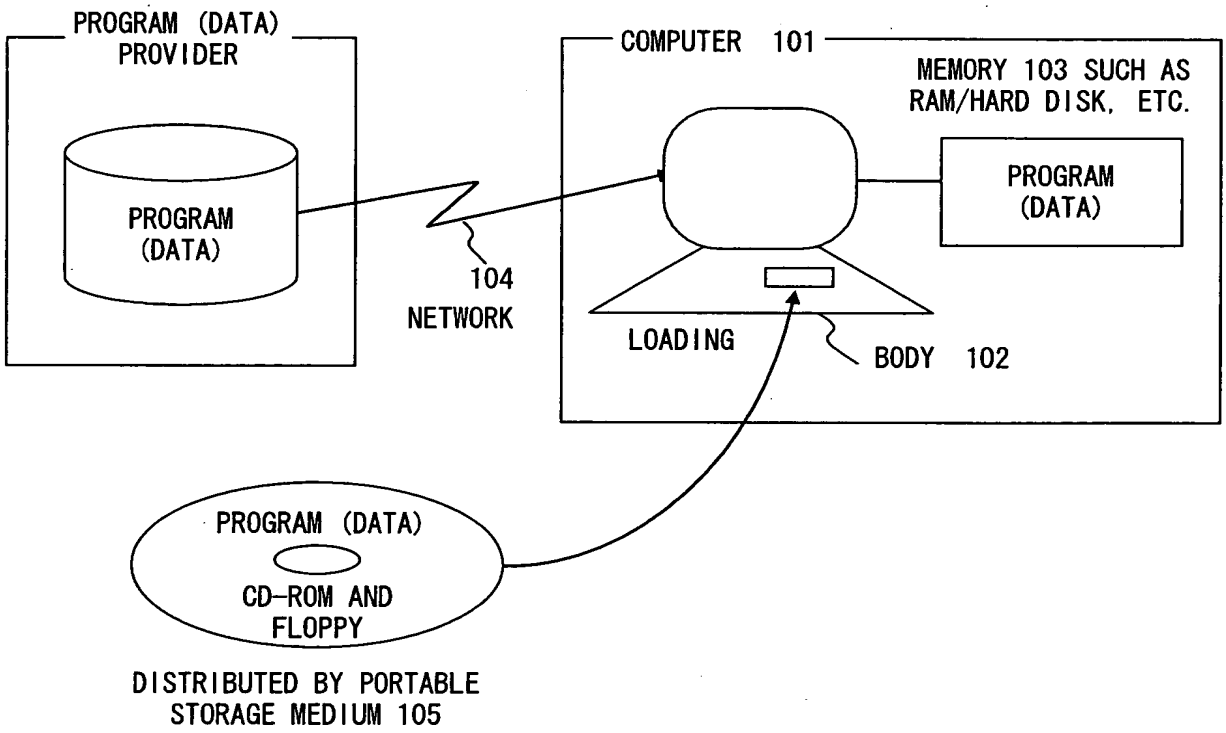

PROGRAM (DATA)
PROVIDER
PROGRAM
(DATA)
104
NETWORK
COMPUTER 101
MEMORY 103 SUCH AS
RAM/HARD DISK, ETC.
PROGRAM
(DATA)
LOADING
BODY 102
PROGRAM (DATA)
CD-ROM AND
FLOPPY
DISTRIBUTED BY PORTABLE
STORAGE MEDIUM 105

FIG. 19

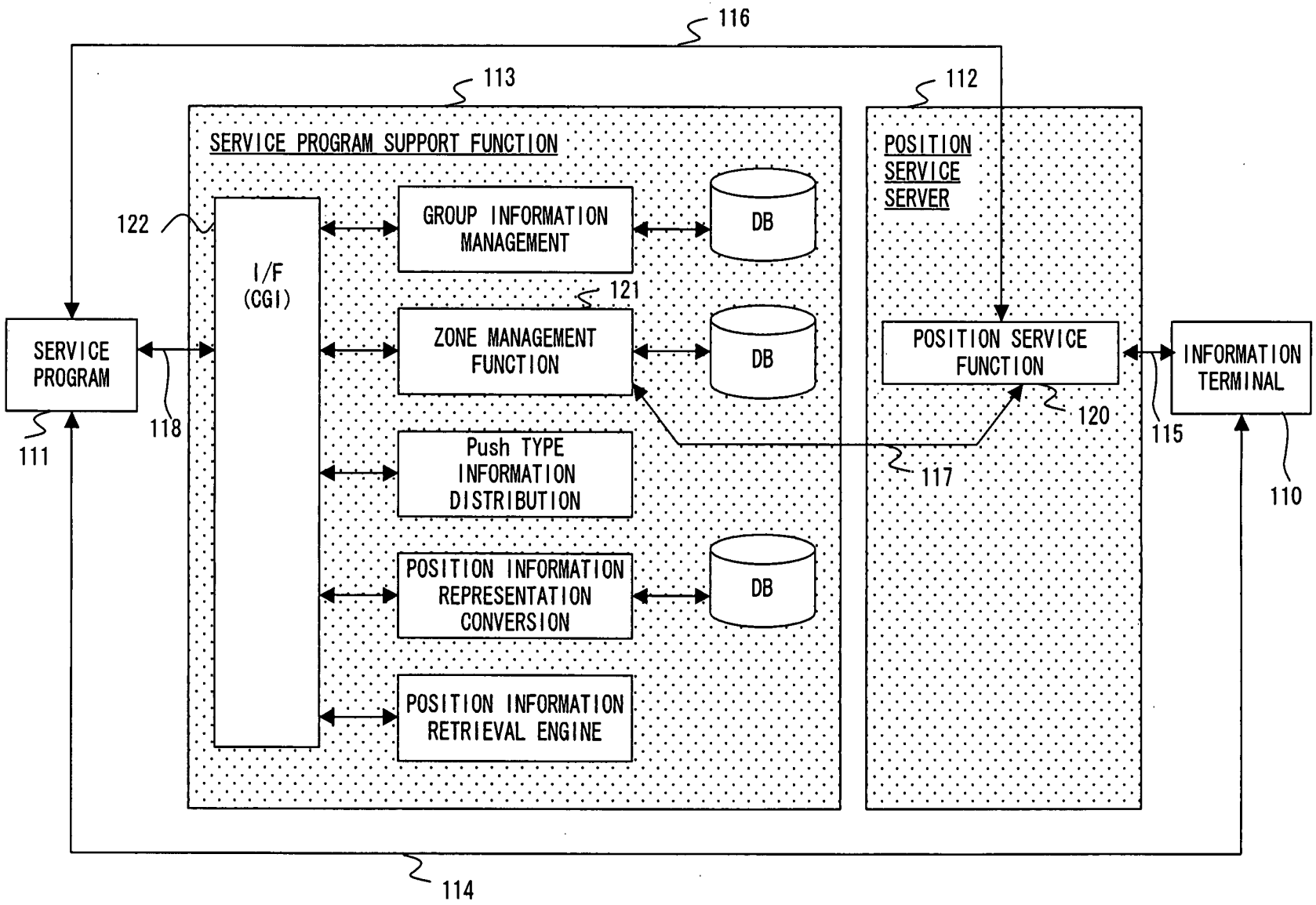

116
113
112
SERVICE PROGRAM SUPPORT FUNCTION
POSITION SERVICE SERVER
122
I/F (CGI)
GROUP INFORMATION MANAGEMENT
DB
121
ZONE MANAGEMENT FUNCTION
DB
SERVICE PROGRAM
POSITION SERVICE FUNCTION
INFORMATION TERMINAL
118
120
115
111
Push TYPE INFORMATION DISTRIBUTION
117
110
POSITION INFORMATION REPRESENTATION CONVERSION
DB
POSITION INFORMATION RETRIEVAL ENGINE
114

FIG. 20